

## **ABSTRACT**

A mixed hydrogen-oxygen fuel generator system uses an electrolytic solution to generate gaseous hydrogen-oxygen fuel through the electrolysis of water. This generator system includes: at least one electrolytic cell with multiple metallic plates used as an internal isolation system in which two of the plates separately connect to both the positive and negative terminal of a DC circuit. These plates are used for the electrolysis of the electrolytic solution in the cell(s) to produce, under pressure, mixed hydrogen-oxygen fuel. The apparatus also includes a cooling system containing a water cooling tank in which there are two zones: one is the electrolytic solution circulation coil and the another is a water circulation zone. The cooler provides the circulating, cooling water used to adjust the temperature of the operating cell and of the electrolyte solution to within a given temperature range in order to ensure that the cell is not affected by excessively elevated temperatures that can stop operations due to cell overheating. Another effect of this cooling system is to precipitate moisture out of the generated gas products. The ignition flame temperature of the gaseous fuel produced can be adjusted for specific applications by passage of the hydrogen/oxygen gas stream through a temperature-control fluid. Thus, continuous 24 hours operation can be achieved along with better gas production efficiency and fuel cell energy generation.